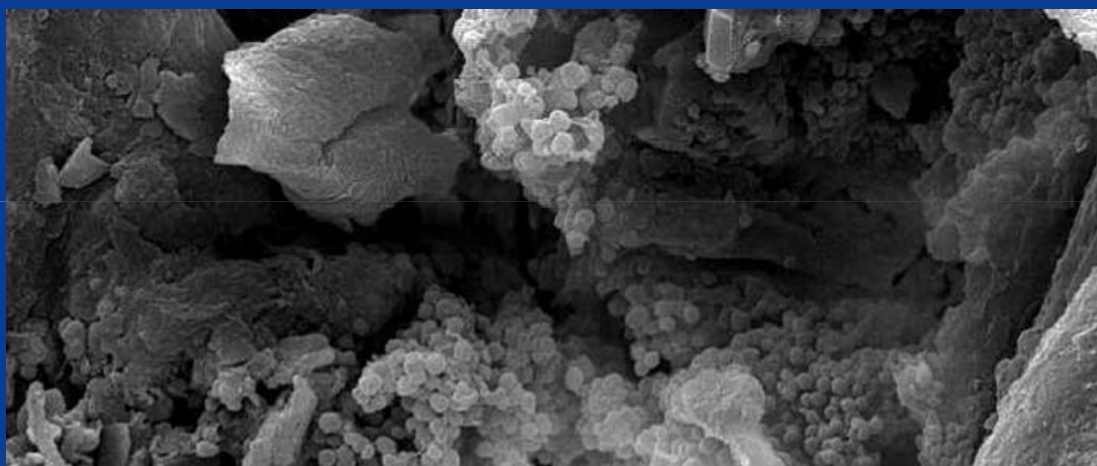




Methicillin Resistant *Staphylococcus aureus* (MRSA): Proposed Revision of ICD-9 Codes




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Staphylococcus aureus

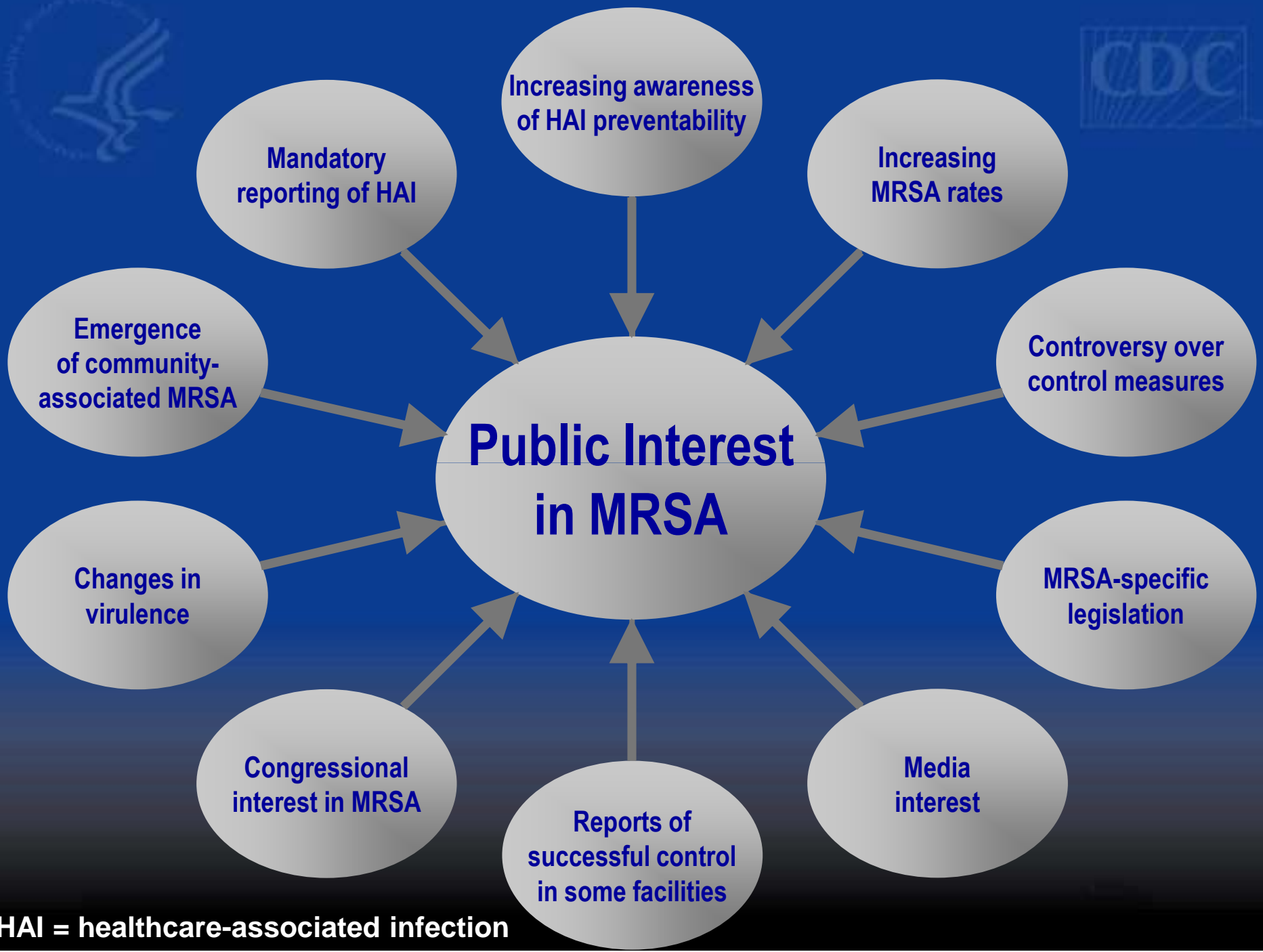
- **Common human colonizer**
- **Common cause of skin infections**
- **Potential to cause severe / invasive infections**
- **Transmission: Direct contact**



Methicillin-Resistant *Staphylococcus aureus* (MRSA)



- Resistant to all currently available β -lactam antibiotics (penicillins, cephalosporins)
- Accounts for majority of *S. aureus* infections in healthcare settings
 - Associated with increased morbidity, mortality, and healthcare costs as compared to methicillin-susceptible *S. aureus* (MSSA)
- 1990s: Emerged as a community pathogen
 - Mainly skin infections
 - Occasionally severe / life-threatening



HAI = healthcare-associated infection

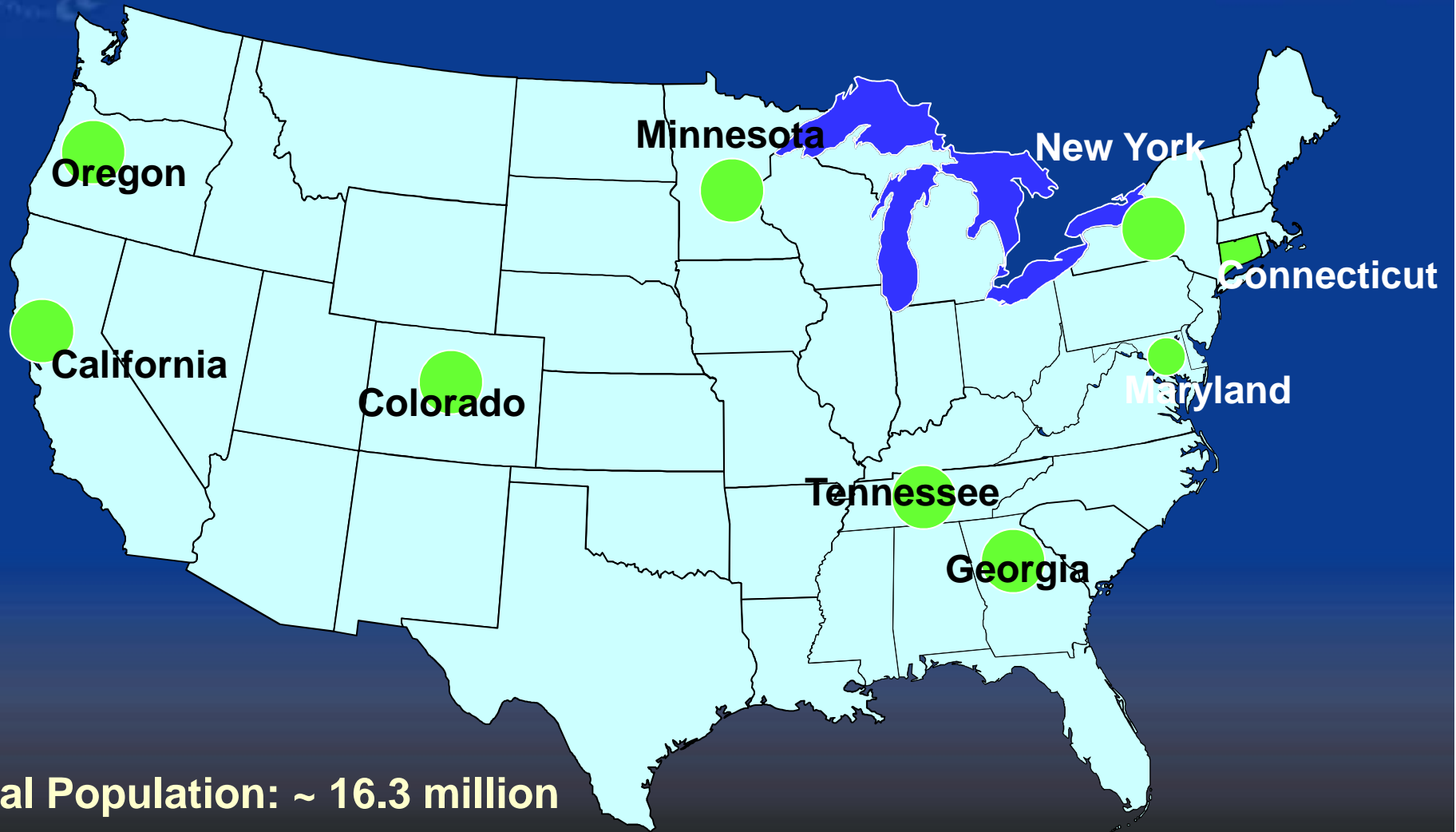


Sources of MRSA Surveillance Data



- Active Bacterial Core Surveillance Project
- National Healthcare Safety Network (NHSN)
- National surveys using ICD-9 codes
- Specialized Projects
 - *EMERGENCY* ID Net
 - National Health and Nutrition Examination Survey

Active Bacterial Core Surveillance Areas (Invasive MRSA)



Total Population: ~ 16.3 million

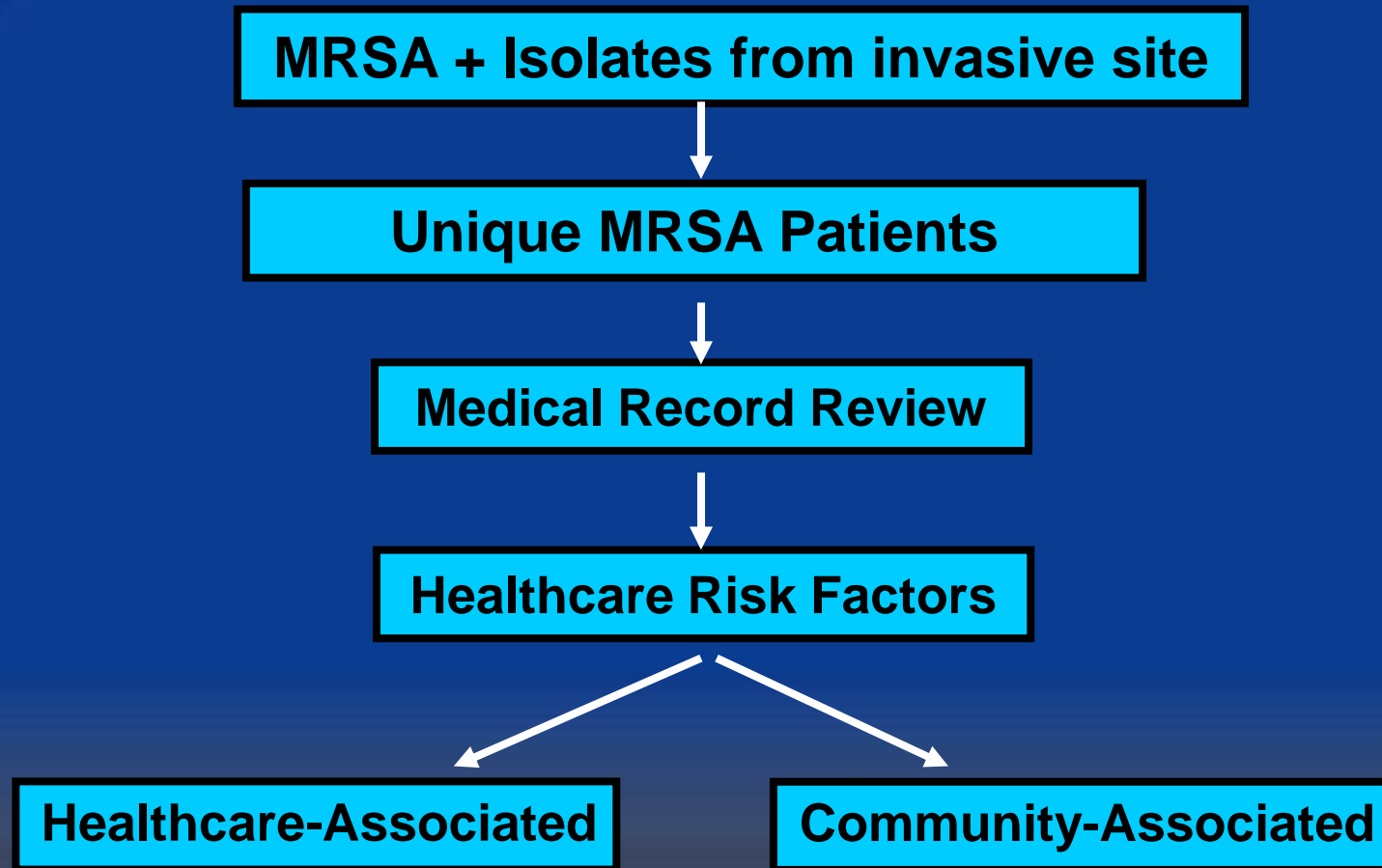


ABCs MRSA Case Categorization



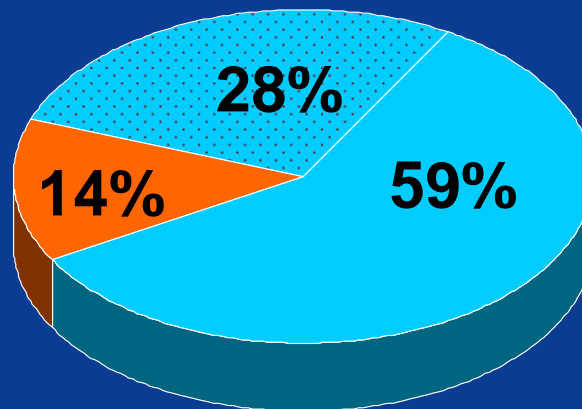
- **Healthcare-associated:**
 - **Hospital-onset:** Cases with positive culture obtained >48 hrs after hospital admission (may also have risk factors)
 - **Community-onset:** Cases with at least 1 of the following risk factors:
 - Invasive device at time of admission; h/o MRSA infection or colonization; h/o surgery, hospitalization, dialysis, or residence in a LTC facility in 12 mos preceding culture
- **Community-associated:** Cases with community-onset and none of above risk factors documented

Methods of Invasive MRSA Surveillance



ABCs Invasive MRSA Surveillance 2005

**National estimates:
94,360 infections; 18,650 deaths**



- Community-Associated
- Healthcare-Associated (community-onset)
- Healthcare-Associated (hospital-onset)



National Healthcare Safety Network (NHSN)



- Voluntary, confidential, internet-based system for monitoring healthcare-associated events and processes (including HAIs)
- Purposes:
 - Provide national estimates of magnitude of adverse events, trends
 - Provide risk-adjusted data for interfacility comparisons
 - Assist facilities in developing surveillance and analysis methods
- Facility-associated infection:
 - No evidence infection was present or incubating at time of admission (as assessed by trained infection control professional)



Use of ICD-9 Data to Monitor Burden and Trends in *S. aureus* Infections

- Nationally representative surveys of hospitalizations and ambulatory care visits
- Utilize:
 - Specific *S. aureus* infection codes (038.11 septicemia, 482.41 pneumonia)
 - *S. aureus* organism code (041.11)
 - Codes for syndromes typical of *S. aureus* (e.g., 682 cellulitis and abscess)
- Methicillin resistance data from V codes (V09.0) or external data sources



Use of ICD-9 Data to Monitor Burden and Trends in *S. aureus* Infections



- **Kuehnert et al, Emerg Infect Dis 2005**
 - 291,542 annual hospital discharges with *S. aureus* infection-related diagnoses 1999-00
 - 125,969 MRSA
- **Klein et al, Emerg Infect Dis 2007**
 - 62% ↑ in *S. aureus*-related hospitalizations 1999-2005; >2-fold ↑ in MRSA-related hospitalizations
- **McCaig et al, Emerg Infect Dis 2006**
 - 11.6 million annual ambulatory care visits for skin infections typical of *S. aureus* 2001-03



Use of ICD-9 Data to Monitor Burden and Trends in *S. aureus* Infections: Challenges

- With exception of septicemia and pneumonia, *S. aureus* organism code not linked to clinical syndrome
- Resistance code (V09.0) not linked to clinical syndrome or *S. aureus* organism code (041.11)
- National surveys contain a limited number of ICD-9 fields → organism codes and resistance codes may be deleted
- Current resistance code (V09.0) not specific for *S. aureus* or for methicillin-resistance
- Currently no colonization code specific for *S. aureus* or MRSA (falls under V02.59 – Other specified bacterial diseases)



Proposal: Modification of ICD-9 Codes for MRSA

- Pages 17-18 of agenda



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